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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/687,218

Applicant(s)

TOSEY, JOSEPH PETER ROBERT

Examiner

Dennis Myint

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 September 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9, 13-28, 32-53, 57-72, 76-97, 101-116 and 120-206 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 13-28, 32-53, 57-72, 76-97, 101-116, 120-206 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This communication is responsive to Applicant's Amendment, filed on September 6, 2007.
2. Claims 1-9, 13-28, 32-53, 57-72, 76-97, 101-116, 120-206 are currently pending in this application. In the amendment filed on September 6, 2007, claims 1, 17, 21, 25, 32, 40, 45, 61, 65, 69, 76, 120, 84, 89, 105, 109, 128, 133, 146, 147, 155, 165, 178, 179, and 187 were amended. Claims 10-12, 29-31, 54-56, 73-75, 98-100 and 117-119 were cancelled. Claims 1, 13, 17, 18, 21, 25, 28, 32, 36, 37, 40, 44, 45, 57, 61, 62, 65, 69, 72, 76, 80, 81, 84, 86, 89, 101, 105, 106, 109, 113, 116, 120, 124, 125, 128, 132, 133, 142, 146, 147, 151, 154, 155, 159, 160, 164, 165, 174, 178, 179, 183, 186, 187, 191, 192, 196, 197, 199, 201, 203, and 205 are independent claims. **This office action is made final.**
3. In light of the amendments made, rejection of claims 25-27 and 69-71 under 35 U.S.C. 101 in the prior office action is hereby withdrawn.

Response to Arguments

4. Applicant's arguments filed on September 6, 2007, have been fully considered but are not persuasive.

Referring to claim 1, Applicant argued that *"And rather storing the one or more bit vectors as required by claim1, Li discloses storing pointers to lexicon entries in the bucket address table. The Applicants respectfully submits that it is*

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improper to equate storing a single bit vector that is based at least in part on a candidate keyword string, with storing pointers to lexicon entries in a bucket address table as produced by the Examiner (Applicant's argument, page 56 first paragraph).

Examiner respectfully disagrees all of the allegations as argued.

Examiner, in his previous office action, gave detail explanation of claimed limitation and pointed out exact locations in the cited prior art. Examiner is entitled to give claim limitations their broadest reasonable interpretation in light of the specification. See MPEP 2111 [R-1] Interpretation of Claims-Broadest Reasonable Interpretation.

During patent examination, the pending claims must be 'given the broadest reasonable interpretation consistent with the specification.' Applicant always has the opportunity to amend the claims during prosecution and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. In re Prater, 162 USPQ 541,550-51 (CCPA 1969).

In response the argument that "And rather storing the one or more bit vectors as required by claim1, Li discloses storing pointers to lexicon entries in the bucket address table. The Applicants respectfully submits that it is improper to equate storing a single bit vector that is based at least in part on a candidate keyword string, with storing pointers to lexicon entries in a bucket address table as produced by the Examiner (Applicant's argument, page 56 first paragraph), it is pointed out that Li teaches storing both bit vectors and pointers (references) as

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required by claim 1 which recites "storing one or more bit vectors and a reference to said one or more candidate keyword strings in said database" as follows:

"storing said one or more bit vectors" (Li, Column 7, Line 1-3, i.e., *Signature Vector*) and "a reference to said one or more candidate keyword strings in said database" (Li, Figure 2, *Store pointers to Lexicon Entries in Bucket Address Table 240*). Note that Li teaches "creating single bit vector based at least in part on said each of one or more candidate keyword strings" in Li, Figure 2: *Fold to Signature Vector 210*; and Column 6 Line 40 through Column 9 Line 35, i.e., "non-positional bi-gram for the lexicon entry string 20" and *The vector 22 is folded at step 210 by examining each sequential group of 8 bits and assigning it a 1 or 0 depending on whether any of the bi-grams in the group was previously "set" (had a value of 1)*".

Applicant also argued that *claim 2 depends on claim 1. Claim 1 being allowable, claim 2 must also be allowable* (Applicant's argument, page 56 second paragraph).

In response, it is pointed out that since claim 1 is not allowable over Li in view of Welch, claim 2 is not allowable in view of its dependency from claim 1.

Referring to claim 13, Applicant argued that *with this amendment, claim 13 has been amended to recite in part creating a single bit vector based at least in part on said input keyword (emphasis added). Thus, arguments made with respect to claim 1 apply here as well. Claim 1 being allowable, claims 13 must also be allowable* (Applicants' argument, page 57 first paragraph).

In response, as discussed with claim 1, Li in view of Welch clearly teaches "creating a single bit vector based at least in part on input keyword". As such, just as claim 1 is not allowable over Li in view of Welch, claim 13 is not allowable.

Applicant argued that *claim 16 depends from claim 13. Claim 13 being allowable, claim 16 must also be allowable* (Applicant's argument, page 57 second paragraph).

In response, it is pointed out that since claim 13 is not allowable over Li in view of Welch, claim 16 is not allowable in view of its dependency from claim 13.

Referring to claim 17, Applicant argued that *thus, arguments made above with respect to claim 1 apply here as well. Claim 1 being allowable, claim 17 must also be allowable* (Applicant's argument, page 57 third paragraph).

In response, as discussed with claim 1, Li in view of Welch clearly teaches "creating a single bit vector based at least in part on input keyword". As such, just as claim 1 is not allowable over Li in view of Welch, claim 17 is not allowable.

Referring to claim 21, Applicant argued that *that thus, arguments made above with respect to claim 1 apply here as well. Claim 1 being allowable, claim 21 must also be allowable* (Applicant's argument, page 58 first paragraph).

In response, as discussed with claim 1, Li in view of Welch clearly teaches "creating a single bit vector based at least in part on input keyword". As such, just as claim 1 is not allowable over Li in view of Welch, claim 21 is not allowable.

Applicant also argued that *claim 24 depends on claim 21. Claim 21 being allowable, claim 24 must also be allowable* (Applicant's argument, page 58 second paragraph).

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In response, it is pointed out that since claim 21 is not allowable over Li in view of Welch, claim 24 is not allowable in view of its dependency from claim 21.

Referring to claim 25, Applicant argued that *the cited references does not disclose or suggest determining a relative frequency of use for at least one symbol in a language* (Applicant's argument, page 59 second paragraph).

In response, it is pointed out that Li teaches the limitation: "determining a relative frequency of use for at least one symbol in a language (Li, Column 7 Line 4-40, i.e. "frequency table");

Additionally, Applicant argued that *Li discloses determining the frequency of a combination of characters; Li does not disclose determining a relative frequency of use for a at least one symbol in a language* (Applicant's argument, page 59 second paragraph).

In response, it is pointed out that Specification of Applicant's claimed invention defines "symbol" in paragraph 0008 of the U.S. Patent Application Publication 2005/0086234 as "As the user type "w" in an input window, the system instantly responds with keyword strings having at least one keyword that stars with the symbol "w". According to this definition, "symbol" in the claimed invention is equivalent to "character". Note that Li in Column 6 Lines 45-48 teaches "all non-alphanumeric characters are mapped to a selected specific non-alphanumeric character (for example "?"). Apparently, Li teaches determining single characters such as non-alphanumeric characters in addition to determining combination of characters. As such, "frequency table" in Column 7 Lines 4-40

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also determines single characters, that is, frequency of single characters.

Therefore, Applicant's argument is moot.

Applicant additionally argued that *since Li does not teach determining a relative frequency of use for at least one symbol in a language, Li cannot teach assigning a statistical weighting to said at least one symbol based at least in part on a relative frequency of use of said at least one symbol as required by claim 25* (Applicant's argument, page 59 third paragraph).

In response, it is pointed, as discussed, Li teaches relative frequency of single characters (Li Column 6 Lines 45-48 and Li Column 7 Lines 4-40). As such, Li also teaches "assigning a statistical weighting to a symbol based on a relative use of said symbol" (Li, Column 7 Line 4-40, i.e., *A counter is accumulated....*).

Referring to claims 27, Applicant argued that *Bi-grams are not "at least one symbol in a language" as required by the claim. An the frequencies disclosed in Li are frequencies of bi-grams, not frequencies of symbols in a language"* (Applicant's argument, page 60 fourth paragraph).

In response, it is pointed out that, as discussed with respect to claim 25 above, Li teaches determining frequencies of both single characters (Column 6 Lines 45-48) and bi-grams in Column 7 Lines 4-40 (i.e., "frequency table). As such, the argument is moot because Li teaches frequencies of symbols in a language.

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Referring to claims 28, Applicant argued that *the arguments above with respect to claim 25 apply here as well* (Applicant's argument, page 63 first paragraph).

In response, it is pointed out that the response to Applicant's argument with respect to claim 25 applies to Applicant's argument with respect to claim 28 as well.

Referring to claim 32, Applicant argued that *thus, arguments made above with respect to claim 1 apply here as well. Claim 1 being allowable, claim 32 must also be allowable* (Applicant's argument, page 63 third paragraph).

In response, as discussed with claim 1, Li in view of Welch clearly teaches "creating a single bit vector based at least in part on input keyword". As such, just as claim 1 is not allowable over Li in view of Welch, claim 32 is not allowable.

Applicant argued that *claim 35 depends from claim 32. Claim 32 being allowable, claim 35 must also be allowable* (Applicant's argument, page 63 fourth paragraph).

In response, it is pointed out that since claim 32 is not allowable over Li in view of Welch, claim 35 is not allowable in view of its dependency from claim 32.

Referring to claim 36, Applicant argued that *the arguments made above with respect to claim 28 apply here as well. Claim 28 being allowable, claim 36 must also be allowable for the same reasons* (Applicant's argument, page 64 third paragraph).

In response, as discussed with claim 28, Li in view of Welch clearly teaches "creating a single bit vector based at least in part on input keyword" and

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"frequency of single characters (symbols)". As such, just as claim 28 is not allowable over Li in view of Welch, claim 36 is not allowable.

Referring to claim 37, Applicant argued that *the arguments made above with respect claim 18 apply here as well. Claim 18 being allowable, claim 37 must also be allowable for at least the same reasons* (Applicant's argument, page 65 third paragraph).

In response, it is pointed Examiner has addressed Applicant's argument regarding claim 18 above with respect to claim 17 because Applicant stated that "the arguments made with respect to claim 17 apply here as well" when presenting arguments for claim 18.

Referring to claim 40, Applicant argued that *the arguments made with respect to claim 21 apply here as well. Claim 21 being allowable, claim 40 must also be allowable* (Applicant's argument, page 65 fourth paragraph).

In response, it is pointed out that, as discussed above, claim 21 is not allowable. As such, claim 40 is not allowable.

Referring claims 45, 46, 57, 60, and 61, Applicant argued that *claims 45, 46, 57, 60, and 61 are similar to claims 1, 2, 13, 16 and 17 respectively. Claims 1, 2, 13, 16, and 17 being allowable, claims 45, 46, 57, 60, and 61 must also be allowable* (Applicant's argument, page 66 second paragraph).

In response, it is pointed that, as discussed above, claims 1, 2, 13, 16, and 17 are not allowable and claims 45, 46, 57, 60, and 61 are not allowable as well.

Applicant also argued that *claims 62, 65, 68, 69, 70, 71, 72, 76, 79, 80, 81, 84, 87, 90, 101, 104, 105, 106, 109, 112, 113, 114, 115, 116, 120, 123, 124,*

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125, 128, 131, 134, 142, 145, 146, 147, 150, 151, 152, 153, 154, 155, 158, 159, 160, 163, 165, 166, 174, 178, 179, 182, 183, 184, 185, 186, 187, 190, 191, 192, and 195 include limitations similar to Claims 18, 21, 16, 25, 26, 27, 28, 32, 16, 36, 87, 40, 16, 1, 2, 13, 16, 17, 18, 21, 16, 25, 26, 27, 28, 32, 16, 36, 37, 40, 43, 1, 2, 13, 16, 17, 18, 16, 25, 26, 27, 28, 32, 16, 36, 40, 16, 1, 2, 13, 16, 17, 21, 16, 25, 26, 27, 28, 32, 16, 36, 40, and 16, respectively. Claims 18, 21, 16, 25, 26, 27, 28, 32, 16, 36, 87, 40, 16, 1, 2, 13, 16, 17, 18, 21, 16, 25, 26, 27, 28, 32, 16, 36, 37, 40, 43, 1, 2, 13, 16, 17, 18, 16, 25, 26, 27, 28, 32, 16, 36, 40, 16, 1, 2, 13, 16, 17, 21, 16, 25, 26, 27, 28, 32, 16, 36, 40, and 16 being allowable, Claims 62, 65, 68, 69, 70, 71, 72, 76, 79, 80, 81, 84, 87, 89, 90, 101, 104, 105, 106, 109, 112, 113, 114, 115, 116, 120, 123, 124, 125, 128, 131, 133, 134, 142, 145, 146, 147, 150, 151, 152, 153, 154, 155, 158, 159, 160, 163, 165, 166, 174, 177, 178, 179, 182, 183, 184, 185, 186, 187, 190, 191, 192, and 195 must also be allowable for at least the same reasons (Applicant's argument, page 66 last paragraph).

In response, it is pointed out since claims 18, 21, 16, 25, 26, 27, 28, 32, 16, 36, 87, 40, 16, 1, 2, 13, 16, 17, 18, 21, 16, 25, 26, 27, 28, 32, 16, 36, 37, 40, 43, 1, 2, 13, 16, 17, 18, 16, 25, 26, 27, 28, 32, 16, 36, 40, 16, 1, 2, 13, 16, 17, 21, 16, 25, 26, 27, 28, 32, 16, 36, 40, and 16 are not allowable, claims 62, 65, 68, 69, 70, 71, 72, 76, 79, 80, 81, 84, 87, 89, 90, 101, 104, 105, 106, 109, 112, 113, 114, 115, 116, 120, 123, 124, 125, 128, 131, 133, 134, 142, 145, 146, 147, 150, 151, 152, 153, 154, 155, 158, 159, 160, 163, 165, 166, 174, 177, 178, 179, 182, 183, 184, 185, 186, 187, 190, 191, 192, and 195 are not allowable as well.

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Referring to claims 3-9, 47-53, 91-97, 135-141 and 167-173, Applicant argued that *claims 3-9, 47-53, 91-97, 135-141, and 167-173 depend from Claims 1, 45, 89, 133, and 165, respectively, and thus include the limitations of claim 1, 45, 89, 133, and 165. The arguments made above with respect to claim 1 apply here as well. The 35 U.S.C. § 103(a) rejection of claim 1 based on Li in view of Welch is unsupported by the art, as each and every element as set forth in claim 1 is not found in Li in view of Welch. Therefore, the 35 U.S.C. § 103(a) rejection of dependent claims 3-9, 47-53, 91-97, 135-141, and 167-173 based on Li in view of Welch and further in view of Braun is also unsupported by the art. Thus, no prima facie case of obviousness has been established and the 35 U.S.C. § 103 rejection should be withdrawn* (Applicant's argument, Page 67 second paragraph).

In response, it is pointed that, as discussed with respect to claim 1 above, Li in view of Welch teaches each and every limitation of claim 1. As such rejections of dependent claims 3-9, 47-53, 91-97, 135-141, and 167-173 based on Li in view of Welch and further in view of Braun is fully supported by the prior art.

Applicant also argued that *Claims 14-15, 19-20, 22-23, 33-34, 38-39, 41-42, 58-59, 63-64, 66-67, 77-78, 82-83, 85-86, 102-103, 107-108, 110-111, 121-122, 126-127, 129-130, 143-144, 148-149, 156-157, 161-162, 175-176, 180-181, 188-189, and 193-194, the arguments made above with respect to the independent claims apply here as well. The 35 U.S.C. § 103(a) rejection of claims based on Li in view of Welch is unsupported by the art, as each and every*

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element as set forth in the independent claims is not found in Li in view of Welch. Therefore, the 35 U.S.C. § 103(a) rejection of dependent claims 14-15, 19-20, 22-23, 33-34, 38-39, 41-42, 58-59, 63-64, 66-67, 77- 78, 82-83, 85-86, 102-103, 107-108, 110-111, 121-122, 126-127, 129-130, 143-144, 148-149, 156-157, 161-162, 175-176, 180-181, 188-189, and 193-194 based on Li in view of Welch and further in view of Alborno et al. is also unsupported by the art (Applicant's argument Page 67 last paragraph and page 68 first paragraph).

In response, it is pointed that, as discussed with respect to claim 1 above, Li in view of Welch teaches each and every limitation of claim 1. As such rejections of dependent claims 14-15, 19-20, 22-23, 33-34, 38-39, 41-42, 58-59, 63-64, 66-67, 77- 78, 82-83, 85-86, 102-103, 107-108, 110-111, 121-122, 126-127, 129-130, 143-144, 148-149, 156-157, 161-162, 175-176, 180-181, 188-189, and 193-194 based on Li in view of Welch and further in view of Alborno et al. is fully supported by the prior art.

Referring to claim 44, Applicant argued that *contrary to the Examiner's statement that Li in view of Welch and further in view of Vagonzzi does not disclose or suggest receiving from a user of a said wireless user device an input keyword string comprising one or more words comprising one or more symbols, each symbol representing the first symbol of a word in a search string* (Applicant's argument, page 70 second paragraph).

In response, it is pointed out that Li in view of Welch (as applied to claim 1) and further in view of Vagonzzi teaches *receiving from a user of a said wireless user device an input keyword string comprising one or more words*

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comprising one or more symbols, each symbol representing the first symbol of a word in a search string (Li, Column 8 Line 51 through Column 9 Line 36 in view of Welch, Paragraphs 0025-0026).

Still referring to claim 44, Applicant also argued that *nowhere does the cited portion of Vagonzzi disclose for each of said elements of a hierarchy, saving input keyword string* (Applicant's argument, page 71 second paragraph).

In response, it is pointed out that Li in view of Welch as applied to claim 1 is directed to a method for incremental keyword search on a wireless device and teaches the limitations: "receiving an input keyword string comprising one or more words comprising one or more symbols, each symbol representing the first symbol of a word in a search string" (Li, Column 8 Line 51 through Column 9 Line 36 in view of Welch, Paragraphs 0025-0026) and "saving input keyword string" (Li Figure 1B: **Enter Unverified String & No. of Groups to Hash 120; Compile Initial Candidate List 130; Li** column 6 Lines 10-28, i.e., *The unverified string might be generated by intensive OCR processing, from a relevant field (such as city name in an address; Particularly Li Column 8 Lines 57-60, i.e., **First, at step 120 of Fig 1B, an unverified string 20 is entered.*** Note that the unverified string 20 is saved in the memory throughout all the processing steps of partitioning and hashing , among others, of Li's method). Therefore Li in view of Welch and further in view of Vagonzzi would teach the limitation "for each of said element of a hierarchy, saving input keyword string" (Li Column 8 Line 51 through Column 9 Line 36, Li Figure 1B, and Li Column 8 Lines 57-60 in view of Vagonzzi Column 11, Line 1-27)

Still referring to claim 44, Applicant also argued that *nowhere does the cited portion of Vagonzzi disclose for each of said elements of a hierarchy, applying a logical "AND" operation to the bit vector of the element and a bit vector based on the input keyword string*" (Applicant's argument, page 71 third paragraph).

In response, it is pointed out that Vagonzzi teaches "*applying a logical "AND" operation to the bit vector of the element and a bit vector based on the input keyword string*" in Figure 2: Query Processor 36, i.e., RANG, **AND**, OR, NOT; Vagonzzi, and in Column 11, Line 1-27, i.e. " then searches the appropriate index for those target keys, starting with the lowest key".

Applicant also argued that *Li in view of Welch and further in view of Vagonzzi does not disclose or suggest said searching comprising , for each of said elements of said hierarchy... if said result is nonzero, removing from said input keyword string any words in said input keyword string that are prefixes words in the element* (Applicants' argument, page 71 last paragraph).

In response, it is pointed out that Li in view of Welch and further in view of Vagonzzi teaches a searching method comprising , for each of said elements of said hierarchy... if said result is nonzero, removing from said input keyword string any words in said input keyword string that are prefixes words in the element (Vagonzzi, Column 11 Lines 1-27, i.e., *if no key is found, a bit vector of all zeroes is returned*).

Applicant also argued that *nowhere does the cited portion of Vagonzzi disclose for each of said elements of a hierarchy, if an input keyword string is*

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empty, adding the element to a list of matched items (Applicant's argument, page 72 second paragraph).

In response, it is pointed out that Li in view of Welch and further in view of Vagonzzi teaches the limitation *, if an input keyword string is empty, adding the element to a list of matched items* (Vagonzzi, Column 11 Lines 1-27, i.e., *if a matching key is found in the index, then the associated used to obtain a bit vector for that key*).

Applicant also argued that *nowhere dose the cited portion of Vagonzzi disclose for each of said elements of a hierarchy, restoring an input keyword string* (Applicant's argument, page 72 third paragraph).

In response, it is pointed out that Li in view of Welch and further in view of Vagonzzi teaches the limitation *restoring an input keyword string* (Vagonzzi, Column 11 Lines 1-77).

Applicant additionally argued that *claims 88, 132, 164, and 196 include limitations similar to claim 44. Claim 44 being allowable, claims 88, 132, 164, and 196 must also be allowable* (Applicant's argument, page 72 fourth paragraph).

In response, it is pointed out that since claim 44 is not allowable, claims 88, 132, 164, and 196 are not allowable as well.

Referring to claims 197-206, Applicant argued that *the arguments made above with respect to claim 25 apply here as well. Clam 25 being allowable, claims 197-206 must also be allowable* (Applicant's argument, page 72 last paragraph).

In response, it is pointed out that, as discussed with respect to claim 25 that claim 25 is not allowable, claims 197-206 are not allowable as well.

In view of the above, the examiner contends that all limitations as recited in the claims have been addressed in this Action. For the above reasons, Examiner believed that rejection of the last Office action was proper.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 1, 2, 13, 16-18, 21, 24-28, 32, 35-37, 40, 43, 45, 46, 57, 60-62, 65, 68-72, 76, 79-81, 84, 87, 89, 90, 101, 104-106, 109, 112-116, 120, 123-125, 128, 131, 133, 134, 142, 145-147, 150-155, 158-160, 163, 165, 166, 174, 177-179, 182-187, 190-192, and 195 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li (U.S. Patent Number 5774588) in view of Welch (U.S. Patent Application Number 2004/0097246).

As per claim 1, Li is directed to a method for creating a keyword string database (Li, Column 6 Line 10-21, i.e., *A Lexicon and An example of such a*

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lexicon would be a list of city names in the United States, which could contain about 45,000 valid entries), and teaches the limitations:

“determining one or more candidate keyword strings to store in said database (Li, Column 6 Line 40-50, i.e. “*valid lexicon strings (such as legal and correct city names)*..”);

“for each of said one more candidate keyword strings, creating single bit vector based at least in part on said each of one or more candidate keyword strings” (Li, Figure 2: *Fold to Signature Vector 210*; and Column 6 Line 40 through Column 9 Line 35, i.e., “*non-positional bi-gram for the lexicon entry string 20*” and *The vector 22 is folded at step 210 by examining each sequential group of 8 bits and assigning it a 1 or 0 depending on whether any of the bi-grams in the group was previously “set” (had a value of 1)*”), said bit vectors for use in comparing an input bit vector with said bit vectors to indicate whether an input keyword string represented by said input bit vector matches said one or more candidate keyword strings” (Li, Column 9 Line 39 through Column 13 Line 62); and

“storing said one or more bit vectors” (Li, Column 7, Line 1-3, i.e., *Signature Vector*”) and “a reference to said one or more candidate keyword strings in said database” (Li, Figure 2, *Store pointers to Lexicon Entries in Bucket Address Table 240*).

Li does not explicitly teach the limitations: “(a method for creating a keyword string database) on a wireless user device” and “said keyword string provided by a user of said wireless user device”.

On the other hand, Welch is directed to “a method for creating a keyword string database on a wireless user device” and “said keyword string provided by a user of said wireless user device” (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data; Figure 1: 20; Paragraph 0025, i.e., In other embodiments, the user may store the textual data in the wireless terminal 20 for future reference; and Paragraph 0026, i.e., In some embodiments, the textual data may be searched for the name of a television show, a person's name, a telephone number or logical network address, a text string that may be identified by a user, program instruction, and/or software code*).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the method of Welch, which creates keyword string database on a wireless user device, with the method of Li, which determines keywords, creates bit vectors, and stores said bit vectors and references to said key words, so that the combined method would create a keyword string database on a wireless user device and determine keywords, create bit vectors, stores said bit vectors and references to said keywords. One would have been motivated to do so in order to enable users to store the textual data on a wireless device and search said textual data using keywords (Welch, Paragraphs 0025-0026).

As per claim 2, Li teaches the limitation:

“wherein said bit vector further comprises at least one bit that represents a non-alphanumeric symbol” (Li, Column 6 Line 43-47, i.e. *All lower case letters were mapped to their upper case letters, all between word spaces are stripped, and all non-alphanumeric characters are mapped to a selected specific non-alphanumeric characters (for example, “?”)*). It is inherent that those non-alphanumeric will be represented in the signature vector, which represents the original string. (Li, Column 7, Line 1-3, i.e., *Signature Vector*).

As per claim 13, Welch in view of Li is directed to “a method for incremental keyword search on a wireless user device” (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data; Figure 1: 20*) and teaches the limitations:

“receiving an input keyword string comprising one or more words comprising one or more symbols” (Li, Column 6 Line 10-21, Column 6 Line 40 through Column 9 Line 35);

“creating a single bit vector based at least in part on said input keyword string” (Li, Figure 2: *Fold to Signature Vector 210*; and Column 6 Line 40 through Column 9 Line 35, i.e., *“non-positional bi-gram for the lexicon entry string 20”* and *The vector 22 is folded at step 210 by examining each sequential group of 8 bits and assigning it a 1 or 0 depending on whether any of the bi-grams in the group was previously “set” (had a value of 1)*”; and Li Column 8 Line 51 through Column 9 Line 58);

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“comparing said bit vector with one or more other bit vectors representing at least one candidate keyword string to create a set of matching bit vectors” (Li, Column 8 Line 51 through Column 9 Line 36);

“applying a conventional keyword matching algorithm” (“comparing vectors”) to said at least one candidate keyword string represented by said set of matching bit vectors (Li, Column 9 Line 58 through Column 13 Line 62) ; and

“presenting any matching candidate keyword strings” (Li, Figure 2, “Output Final Candidate List” 155).

As per claim 16, Welch in view of Li is directed the method of claim 13 and teaches the limitation:

“wherein said comparing is independent of the order of keyword prefixes in keyword strings” (Li, Column 8 50 through Column 9 Line 59). Note that, in the method and system of Li, *between-word spaces in input strings are stripped* (Column 6 Line 40-50), said input strings are partitioned and hashed, then formed into bi-gram bit vectors and finally transformed into a signature vector (Li, Column 6, Line 40 through Column 7 Line 3). As such, the method of Li is capable of comparing input string independent of the order of keyword prefixes.

As per claim 17, Welch in view of Li is directed to “a method for creating a keyword string database on a wireless user device” (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless*

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terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data; Figure 1: 20) and teaches the limitations:

“determining one or more candidate keyword strings to store in said database” (Li, Column 6 Line 40-50, i.e. “valid lexicon strings (such as legal and correct city names).....”);

“for each of said one or more candidate keyword strings,
creating a single bit vector based at least in part on said each of said one or more candidate keyword strings” (Li, Figure 2: *Fold to Signature Vector 210*; and Column 6 Line 40 through Column 9 Line 35, i.e., “*non-positional bi-gram for the lexicon entry string 20*” and *The vector 22 is folded at step 210 by examining each sequential group of 8 bits and assigning it a 1 or 0 depending on whether any of the bi-grams in the group was previously “set” (had a value of 1)*, “said bit vector having a bit position for each symbol in an alphabet and having bits set for bit positions corresponding to at least one symbol representing the first symbol of a word in said each of said one or more candidate keyword strings” (Li, Column 6 Line 40 through Column 9 Line 35), “said bit vectors for use in comparing an input bit vector with said one or more bit vectors to indicate whether an input keyword string represented by said input bit vector matches said one or more candidate keyword strings” (Li, Column 8 Line 51 through Column 9 Line 36);
and

“storing said one or more bit vectors and a reference to said one or more candidate keyword strings in said database” (Li, Column 7, Line 1-3, i.e.

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"Signature Vector" and Li, Figure 2, "Store pointers to Lexicon Entries in Bucket Address Table" 240).

As per claim 18, Li in view of Welch is directed to "a method for incremental keyword search on a wireless user device" (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data; Figure 1: 20*) and teaches the limitations:

"submitting to said wireless user device an input keyword string comprising one or more words comprising one or more symbols" (Li, Column 6 Line 10-21 and Column 8 Line 51 through Column 13 Line 62; and Welch, Paragraph 0026); and

"receiving in response to said submitting at least one candidate keyword string where the first symbol of at least one word in each of said at least one candidate keyword string matches the first symbol of the corresponding word in said input keyword string" (Li, Column 6 Line 40 through Column 9 Line 35 and Li, Column 8 Line 51 through Column 9 Line 36).

As per claim 21, Li in view of Welch is directed to "a method for incremental keyword search on a wireless user device" (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data; Figure 1: 20*) and teaches the limitations:

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“receiving an input keyword string comprising one or more words comprising one or more symbols” (Li, Column 6 Line 10-21, Column 6 Line 40 through Column 9 Line 35);

“creating a single bit vector based at least in part on said input keyword string” (Li, Figure 2: *Fold to Signature Vector 210*; and Column 6 Line 40 through Column 9 Line 35, i.e., *“non-positional bi-gram for the lexicon entry string 20”* and *The vector 22 is folded at step 210 by examining each sequential group of 8 bits and assigning it a 1 or 0 depending on whether any of the bi-grams in the group was previously “set” (had a value of 1)*), “said bit vector having a bit position for each symbol in an alphabet and having bits set for positions corresponding to at least one symbol representing the first symbol of a word in said input keyword string” (Li, Column 6 Line 40 through Column 9 Line 35);

“comparing said bit vector with one or more other bit vectors representing at least one candidate keyword string to create a set of matching bit vectors” (Li, Column 8 Line 51 through Column 9 Line 36);

“applying a conventional keyword matching algorithm to said at least one candidate keyword string represented by said set of matching bit vectors” (Li, Column 9 Line 58 through Column 13 Line 62); and

“presenting any matching candidate keyword strings” (Li, Figure 2, “Output Final Candidate List” 155).

Claim 24 is rejected on the same basis as claim 16.

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As per claim 25, Li in view of Welch is directed to “a method for comparing keyword strings on a wireless user device” (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data; Figure 1: 20*) and teaches the limitations:

“determining a relative frequency of use for at least one symbol in a language (Li, Column 7 Line 4-40, i.e. “frequency table”);

“assigning a statistical weighting” (*A counter is accumulated ...*) “to said at least one symbol based at least in part on a relative frequency of use of said at least one symbol” (Li, Column 7 Line 4-40);

“assigning each of said at least one symbol to one of a plurality of groups” (Li, Column 7 Line 4-40, “first group”);

“comparing a first keyword string and a second keyword string based at least in part on whether at least one symbol of said first keyword string is assigned to the same group as at least one corresponding symbol of said second keyword string” (Li, Column 8 Line 51 through Column 9 Line 36);

“presenting a result of said comparing to a user of said wireless user device” (Welch, Paragraph 0026).

As per claim 26, Li in view of Welch is directed to the method of claim 25 and teaches the limitations:

“wherein said assigning further comprises assigning each of said at least one symbol to one of a plurality of groups so as to minimize the difference

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between the sums of statistical weightings for symbols comprising each group in said plurality of groups” (Li, Column 7 Line 4-40, *groups*).

As per claim 27, Li in view of Welch is directed to the method of claim 25 and teaches the limitation:

“wherein said relative frequency of use comprises the relative frequency of use of symbols in the first character of words in said language” (Li, Column 7 Line 4-40).

As per claim 28, Li in view of Welch is directed to “a method for creating a keyword string database on a wireless user device” (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data; Figure 1: 20*), and teaches the limitations:

“determining one or more candidate keyword strings to store in said database (Li, Column 6 Line 40-50, i.e., *valid lexicon strings (such as legal and correct city names).....*);

“creating one or more bit vectors based at least in part on said one or more candidate keyword strings” (Li, Column 6 Line 40 through Column 9 Line 35), “each bit of said one or more bit vectors corresponding to one or more symbols in an alphabet, bits having a bit position corresponding to the first symbol of a word in said one or more candidate keyword strings being set” (Li, Column 6 Line 40 through Column 9 Line 35), “said one or more bit vectors for

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use in comparing an input bit vector with said one or more bit vectors to indicate whether an input keyword string represented by said input bit vector matches said one or more candidate keyword strings" (Li, Column 8 Line 51 through Column 9 Line 36); and

"storing said one or more bit vectors and a reference to said one or more candidate keyword strings in said database" (Li, Column 7, Line 1-3 and Li, Figure 2, *Store pointers to Lexicon Entries in Bucket Address Table 240*).

As per claim 32, Li in view of Welch is directed to "a method for incremental keyword search on a wireless user device" (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data; Figure 1: 20*) and teaches the limitations:

"receiving an input keyword string comprising one or more words comprising one or more symbols, each symbol representing the first symbol of a word in a search string" (Li, Column 6 Line 10-21, Column 6 Line 40 through Column 9 Line 35);

"creating a single bit vector based at least in part on said input keyword string, each bit corresponding to one or more symbols in an alphabet, bits having a bit position corresponding to said one or more symbols being set" (Li, Figure 2: *Fold to Signature Vector 210*; and Column 6 Line 40 through Column 9 Line 35, i.e., *"non-positional bi-gram for the lexicon entry string 20"* and *The vector 22 is folded at step 210 by examining each sequential group of 8 bits and assigning it*

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a 1 or 0 depending on whether any of the bi-grams in the group was previously "set" (had a value of 1); and also see Li, Column 8 Line 51 through Column 9 Line 58);

"comparing said bit vector with one or more other bit vectors representing at least one candidate keyword string to create a set of matching bit vectors" (Li, Column 8 Line 51 through Column 9 Line 36);

"applying a conventional keyword matching algorithm to said at least one candidate keyword string represented by said set of matching bit vectors" (Li, Column 9 Line 58 through Column 13 Line 62); and

"presenting any matching candidate keyword strings" (Li, Figure 2, "Output Final Candidate List" 155).

Claim 35 is rejected on the same basis as claim 16.

As per claim 36, Li in view of Welch is directed to "a method for creating a keyword string database on a wireless user device" (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data; Figure 1: 20*) and teaches the limitations:

"determining one or more candidate keyword strings to store in said database" (Li, Column 6 Line 40-50, i.e., *valid lexicon strings (such as legal and correct city names).....*);

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“creating one or more bit vectors based at least in part on said one or more candidate keyword strings” (Li, Column 6 Line 40 through Column 9 Line 35), “each bit of said one or more bit vector corresponding to one or more symbols in an alphabet, bits having a bit position corresponding to a symbol of a prefix of a word in said one or more candidate keyword strings being set” (Li, Column 6 Line 40 through Column 9 Line 35), “said one or more bit vectors for use in comparing an input bit vector with said one or more bit vectors to indicate whether an input keyword string represented by said input bit vector matches said one or more candidate keyword strings” (Li, Column 8 Line 51 through Column 9 Line 36); and

“storing said one or more bit vectors and a reference to said one or more candidate keyword strings in said database” (Li, Column 7, Line 1-3, i.e., *Signature Vector* and Li, Figure 2: *Store pointers to Lexicon Entries in Bucket Address Table* 240).

As per claim 37, Li in view of Welch is directed to “a method for incremental keyword search on a wireless user device” (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data; Figure 1: 20*) and teaches the limitations:

“submitting an input keyword string comprising one or more words comprising one or more symbols” (Li, Column 6 Line 10-21, Column 6 Line 40 through Column 9 Line 35); and

“receiving in response to said submitting at least one candidate keyword string where a prefix of a word of a matching candidate keyword string comprises at least one symbol that belongs to the same symbol group as the corresponding symbol of the corresponding word in said input keyword string” (Li, Column 8 Line 51 through Column 9 Line 36).

As per claim 40, Li in view of Welch is directed to “a method for incremental keyword search on a wireless user device” (Welch, Paragraph 0026, i.e., *In further embodiments, the broadcast media receiver 10 and/or the wireless terminal 20 are configured to determine whether one or more keywords or other criteria are present in the textual data; Figure 1: 20*) and teaches the limitations:

“receiving an input keyword string comprising one or more words comprising one or more symbols” (Li, Column 6 Line 10-21, Column 6 Line 40 through Column 9 Line 35);

“creating a single bit vector based at least in part on said input keyword string” (Li, Figure 2: *Fold to Signature Vector 210*; and Column 6 Line 40 through Column 9 Line 35, i.e., *“non-positional bi-gram for the lexicon entry string 20”* and *The vector 22 is folded at step 210 by examining each sequential group of 8 bits and assigning it a 1 or 0 depending on whether any of the bi-grams in the group was previously “set” (had a value of 1)*; and also see Li, Column 8 Line 51 through Column 9 Line 58), “each bit corresponding to one or more symbols in an alphabet, bits having a bit position corresponding to a prefix of a word in said

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one or more symbols being set” (Li, Column 6 Line 40 through Column 9 Line 35);

“comparing said bit vector with one or more other bit vectors representing at least one candidate keyword string to create a set of matching bit vectors” (Li, Column 8 Line 51 through Column 9 Line 36);

“applying a conventional keyword matching algorithm to said at least one candidate keyword string represented by said set of matching bit vectors” (Li, Column 9 Line 58 through Column 13 Line 62); and

“presenting any matching candidate keyword strings” (Li, Figure 2: *Output Final Candidate List 155*).

Claim 43 is rejected on the same basis as claim 16.

Claim 45 is rejected on the same basis as claim 1.

Claim 46 is rejected on the same basis as claim 2.

Claim 57 is rejected on the same basis as claim 13.

Claim 60 is rejected on the same basis as claim 16.

Claim 61 is rejected on the same basis as claim 17.

Claim 62 is rejected on the same basis as claim 18.

Claim 65 is rejected on the same basis as claim 21.

Claim 68 is rejected on the same basis as claim 16.

Claim 69 is rejected on the same basis as claim 25.

Claim 70 is rejected on the same basis as claim 26.

Claim 71 is rejected on the same basis as claim 27.

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Claim 72 is rejected on the same basis as claim 28.

Claim 76 is rejected on the same basis as claim 32.

Claim 79 is rejected on the same basis as claim 16.

Claim 80 is rejected on the same basis as claim 36.

Claim 81 is rejected on the same basis as claim 37.

Claim 84 is rejected on the same basis as claim 40.

Claim 87 is rejected on the same basis as claim 16.

Claim 89 is essentially the same as claim 1 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for creating a keyword string database and rejected for the same reasons as applied hereinabove.

Claim 90 is essentially the same as claim 2 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for creating a keyword string database and rejected for the same reasons as applied hereinabove.

Claim 101 is essentially the same as claim 13 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 104 is essentially the same as claim 16 except that it set forth the claimed invention as a program storage device readable by a machine rather

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than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 105 is essentially the same as claim 17 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for creating a keyword string database and rejected for the same reasons as applied hereinabove.

Claim 106 is essentially the same as claim 18 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 109 is essentially the same as claim 21 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 112 is essentially the same as claim 16 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 113 is essentially the same as claim 25 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for comparing strings on a wireless user device on a wireless user device and rejected for the same reasons as applied hereinabove.

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Claim 114 is essentially the same as claim 26 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for comparing strings on a wireless user device on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 115 is essentially the same as claim 27 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for comparing strings on a wireless user device on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 116 is essentially the same as claim 28 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for creating a keyword string database and rejected for the same reasons as applied hereinabove.

Claim 120 is essentially the same as claim 21 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 123 is essentially the same as claim 16 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 124 is essentially the same as claim 36 except that it set forth the claimed invention as a program storage device readable by a machine rather

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than a method for creating a keyword string database on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 125 is essentially the same as claim 37 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 128 is essentially the same as claim 40 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 131 is essentially the same as claim 43 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 133 is essentially the same as claim 1 except that it set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for creating a keyword string database and rejected for the same reasons as applied hereinabove.

Claim 134 is essentially the same as claim 2 except that it set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for creating a keyword string database and rejected for the same reasons as applied hereinabove.

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Claim 142 is essentially the same as claim 13 except that it set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 145 is essentially the same as claim 16 except that it set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 146 is essentially the same as claim 17 except that it set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for creating a keyword string database and rejected for the same reasons as applied hereinabove.

Claim 147 is essentially the same as claim 18 except that it set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 150 is essentially the same as claim 16 except that it set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 151 is essentially the same as claim 25 except that it set forth the claimed invention as an apparatus for comparing keyword strings on a wireless user device rather than a method for comparing keyword strings on a wireless

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user device on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 152 is essentially the same as claim 26 except that it set forth the claimed invention as an apparatus for comparing keyword strings on a wireless user device rather than a method for comparing keyword strings on a wireless user device on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 153 is essentially the same as claim 27 except that it set forth the claimed invention as an apparatus for comparing keyword strings on a wireless user device rather than a method for comparing keyword strings on a wireless user device on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 154 is essentially the same as claim 28 except that it set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for creating a keyword string database and rejected for the same reasons as applied hereinabove.

Claim 155 is essentially the same as claim 32 except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 158 is essentially the same as claim 16 except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless

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user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 159 is essentially the same as claim 36 except that it set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for creating a keyword string database on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 160 is essentially the same as claim 40 except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 163 is essentially the same as claim 16 except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 165 is essentially the same as claim 1 except that it set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for creating a keyword string database and rejected for the same reasons as applied hereinabove.

Claim 166 is essentially the same as claim 2 except that it set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for creating a keyword string database and rejected for the same reasons as applied hereinabove.

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Claim 174 is essentially the same as claim 13 except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 177 is essentially the same as claim 16 except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 178 is essentially the same as claim 17 except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 179 is essentially the same as claim 21 except that it set forth the claimed invention as an apparatus for incremental keyword search rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 182 is essentially the same as claim 16 except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 183 is essentially the same as claim 25 except that it set forth the claimed invention as an apparatus for comparing keyword strings on a wireless user device rather than a method for comparing keyword strings on a wireless

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user device on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 184 is essentially the same as claim 26 except that it set forth the claimed invention as an apparatus for comparing keyword strings on a wireless user device rather than a method for comparing keyword strings on a wireless user device on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 185 is essentially the same as claim 27 except that it set forth the claimed invention as an apparatus for comparing keyword strings on a wireless user device rather than a method for comparing keyword strings on a wireless user device on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 186 is essentially the same as claim 28 except that it set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for creating a keyword string database and rejected for the same reasons as applied hereinabove.

Claim 187 is essentially the same as claim 32 except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 190 is essentially the same as claim 16 except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless

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user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 191 is essentially the same as claim 36 except that it set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for creating a keyword string database on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 192 is essentially the same as claim 40 except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 195 is essentially the same as claim 16 except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

7. Claim 3-9, 47-53, 91-97, 135-141, and 167-173 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of Welch and further in view of Braun (U.S. Patent Application Publication Number 2004/0064787).

Referring to claim 3, Li in view of Welch teaches that bit vectors of claim 1 comprises at one bit that represents a non-alphanumeric symbol but does not explicitly disclose the limitation: "wherein said non-alphanumeric symbol indicates an e-mail address".

However, Braun teaches the limitation:

“wherein said non-alphanumeric symbol indicates an e-mail address”
(Braun, et al., Paragraph 0049). Braun teaches a method and system for using a digital pen, wherein non-alphanumeric symbols are used to indicate a serial number or a type of form (Braun, et al., Paragraph 0049, i.e. “Additionally, non-alphanumeric characters such as special characters or symbols may be used to enable the back end application to recognize the unique form indication or serial number.”).

At the time the invention was made, it would have obvious to a person of ordinary skill in the art to add the feature of using non-alphanumeric symbols to represent other data such as a serial number, as taught by Braun et al, to the method and system of Welch in view of Li so that, in the resultant method and system, the non-alphanumeric symbol(s) would indicate an email. One would have been motivated to do so in order to simply facilitate search operations.

Claims 4-9 are rejected on the same basis as claim 3. Braun teaches a method and system for using a digital pen, wherein non-alphanumeric symbols are used to indicate a serial number or a type of form (Braun, et al., Paragraph 0049, i.e. “Additionally, non-alphanumeric characters such as special characters or symbols may be used to enable the back end application to recognize the unique form indication or serial number.”). As such, using symbols to represent/indicate other data, including a mobile number, a wired number, a paper mail address, a cost ranking, a quality ranking, a cuisine or the like, are

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taught by Braun.

Claims 47-53 are rejected on the same basis as claims 3-9 respectively.

Claims 91-97 are essentially the same as claim 3-9 except that the claims set forth the claimed invention as a program storage device readable by a machine rather than a method for creating a keyword string database and rejected for the same reasons as applied hereinabove.

Claim 135-141 are essentially the same as claim 3-9 except that the claims set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for creating a keyword string database and rejected for the same reasons as applied hereinabove.

Claims 167-173 are essentially the same as claim 3-9 except that the claims set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for creating a keyword string database and rejected for the same reasons as applied hereinabove.

8. Claims 14-15, 19-20, 22-23, 33-34, 38-39, 41-42, 58-59, 63-64, 66-67, 77-78, 82-83, 85-86, 102-103, 107-108, 110-111, 121-122, 126-127, 129-130, 143-144, 148-149, 156-157, 161-162, 175-176, 180-181, 188-189, and 193-194 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of Welch

and further in view of Albornoz et al. (hereinafter "Albornoz") (U.S. Patent Application Publication Number 2004/0260929).

Referring to claim 14, Li in view of Welch as applied to claim 13 above does not explicitly disclose the limitation: "further comprising preempting said method after a predetermined amount of time".

However, Albornoz teaches the limitation:

"further comprising preempting said method after a predetermined amount of time" (Albornoz, Paragraph 0054). Albornoz teaches a method and system for recovering data object annotations, wherein a search is ended/preempted after a predetermined amount of time (Albornoz, Paragraph 0054, i.e., *The search continuation a criterion is evaluated 1507 according to a predetermined plan and if the criterion is met, the search continues, otherwise, the search is ended 1508. An example continuation is to perform the search continually during a predetermined period of time...*").

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to add the feature of preempting/ending a search after a predetermined period of time, as taught by Albornoz to the method and system of Welch in view of Li so that the resultant method and system would comprise preempting the method of claim 10 after a predetermined period of time. One would have been motivated to do so in order to run the search at regular intervals (Albornoz, Paragraph 0053, i.e., *In an alternative embodiment of the system (Fig. 15), the search process may run at regular intervals.*).

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Referring to claim 15, aborting/preempting a search process or any other process after a predetermined amount of time (two seconds or three seconds or whatever amount of time) is taught by Alborno as applied to claim 14.

Claims 14-15, 19-20, 22-23, 33-34, 38-39, 41-42, 58-59, 63-64, 66-67, 77-78, 82-83, and 85-86 are rejected on the same basis as claims 14 and 15 respectively.

Claims 102-103 are essentially the same as claims 14 and 15 respectively except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claims 107-108 are essentially the same as claims 14 and 15 respectively except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claims 110-111 are essentially the same as claim 14 and 15 respectively except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

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Claims 121-122 are essentially the same as claim 14 and 15 respectively except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claims 126-127 are essentially the same as claim 14 and 15 respectively except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claims 129-130 are essentially the same as claim 14 and 15 respectively except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claims 143-144 are essentially the same as claim 14 and 15 respectively except that it set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claims 148-149 are essentially the same as claim 14 and 15 respectively except that it set forth the claimed invention as an apparatus for creating a keyword string database on a wireless user device rather than a method for

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incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claims 156-157 are essentially the same as claim 14 and 15 respectively except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claims 161-162 are essentially the same as claim 14 and 15 respectively except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claims 175-176 are essentially the same as claim 14 and 15 respectively except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claims 180-181 are essentially the same as claim 14 and 15 respectively except that it set forth the claimed invention as an apparatus for incremental keyword search rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claims 188-189 are essentially the same as claim 14 and 15 respectively except that it set forth the claimed invention as an apparatus for incremental

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keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claims 193-194 are essentially the same as claim 14 and 15 respectively except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

9. Claim 44, 88, 132, 164, and 196 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of Welch and further in view of Vagonzzi (U.S. Patent Number 6499033).

Referring to claim 44, Li in view of Welch as applied to claim 1 is directed to a method for incremental keyword search on a wireless device and teaches the limitations: "receiving an input keyword string comprising one or more words comprising one or more symbols, each symbol representing the first symbol of a word in a search string" (Li, Column 8 Line 51 through Column 9 Line 36 in view of Welch, Paragraphs 0025-0026) and "saving input keyword string" (Li Figure 1B: **Enter Unverified String** & No. of Groups to Hash 120; Compile Initial Candidate List 130; Li column 6 Lines 10-28, i.e., *The unverified string might be generated by intensive OCR processing, from a relevant field (such as city name in an address; Particularly Li Column 8 Lines 57-60, i.e., **First, at step 120 of***

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Fig 1B, an unverified string 20 is entered. Note that the unverified string 20 is saved in the memory throughout all the processing steps of partitioning and hashing , among others, of Li's method).

However, Li in view of Welch does not explicitly disclose the limitation: "receiving a hierarchy, elements of said hierarchy comprising intermediate nodes and leaf nodes representing one or more keyword strings comprising one or more words comprising one or more symbols" and "searching said hierarchy bit vectors for a match with said input keyword string, said searching comprising, for each said elements of said hierarchy: (saving input keyword string is taught by Li) applying a logical "AND" operation to the bit vector of the element and a bit vector based at least in part on said input keyword string, said applying producing a result".

On the other hand, Vagonzzi teaches a database method and apparatus using hierarchical bit vector index structure comprising:

"receiving a hierarchy, elements of said hierarchy comprising intermediate nodes and leaf nodes representing one or more keyword strings comprising one or more words comprising one or more symbols" (Vagonzzi, Figure 2, Column 5 Line 44 through Column 6 Line 10, i.e. "The indexes 30 are actually collections of keys stored in a B-tree.");

"creating hierarchy bit vectors corresponding to said one or more keyword strings in said hierarchy" (Vagonzzi, Figure 2, Column 5 Line 44 through Column 6 Line 10, i.e. "The indexes 30 are actually collections of keys stored in a B-tree."););

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"searching said hierarchy bit vectors for a match with said input keyword string" (Vagonzzi, Column 10 Line 40-65, i.e. "Query Processing the Indexes"), "said searching comprising, for each of said elements of said hierarchy: (saving said input keyword string is taught by Li); "applying a logical "AND" operation to the bit vector of the element and a bit vector based at least in part on said input keyword string" (Vagonzzi, Figure 2: Query Processor 36, i.e., RANG, **AND**, OR, NOT; Vagonzzi, Column 11, Line 1-27, i.e. " then searches the appropriate index for those target keys, starting with the lowest key.....), "said applying producing a result" (Official Note: a search always returns a result); "if said result is nonzero, removing from said input keyword string any words in said input keyword string that are prefixes of words in the element" (...If no key is found, a bit vector of all zeros is returned. If a matching key is found in the index, then the associated link is used to obtain a bit vector for that key...."); "if said input keyword string is empty, adding said element to a list of matched items" ((...If no key is found, a bit vector of all zeros is returned. If a matching key is found in the index, then the associated link is used to obtain a bit vector for that key...."); and "restoring said input keyword string; and rendering said list of matched items" (Vagonzzi, Column 11, Line 1-27).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the method and system which employ both bit vectors and a tree hierarchy as taught by Vagonzzi with the method and system of Welch in view of Li so that the combined method and system would accommodate bit vectors in a tree hierarchy and logical searches

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into the trees could be performed. One would have been motivated to do so in order to *"provide a method and apparatus for managing large amounts of data in a manner that provides the following benefits: 1. Very fast query response; 2. Fast Update response; 3. Support for"* (Vagonzzi, Column 3, Line 7-26).

Claim 88 is rejected on the same basis as claim 44.

Claim 132 is essentially the same as claim 44 except that it set forth the claimed invention as a program storage device readable by a machine rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 164 is essentially the same as claim 44 except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

Claim 196 is essentially the same as claim 44 except that it set forth the claimed invention as an apparatus for incremental keyword search on a wireless user device rather than a method for incremental keyword search on a wireless user device and rejected for the same reasons as applied hereinabove.

10. Claim 197- 206 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of Ronchi et al., (U.S. Patent Number 6496836).

Referring to claim 197, Li teaches assigning groups based on frequency of bit vectors (Li, Column 7 Line 4-40, "groups") and compares groups based on signature vector. But Li does not explicitly disclose assigning at least one symbol to each group and comparing keywords based on said symbol (s). However, Ronchi et al. teaches a method and system for symbol-based memory language, wherein symbols are assigned to a plurality of groups (Ronchi et al, Column 8 Line 32-67 and Column 3 Line 39-44) and based on the symbol selected, a caller is directed to a particular group of communication handlers (Ronchi et al., Column 3 Line 39-44).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to add the feature of employing symbols to groups and using said symbol(s) to channel a caller to a group of handlers based on said symbol(s), as taught by Ronchi et al., to the method and system of Li, which compares bit-vectors which represent strings at least in part based on groups of different bit vector frequencies, so that the resultant method and system would comprise assigning at least one symbol to each group and comparing keywords based on said symbol (s). One would have been motivated to do so in order to "find a way to record information pertaining to their customers quickly, and to access this information consistently, without delay, and in a readily understandable format in order to best satisfy the expectations of their customers." (Ronchi et al. Column 2, Line 34-41)

Referring to claim 198, Li in view of Ronchi et al. as discussed above in regard to claim 197 above discloses the invention as claimed. Li in view of

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Ronchi et al. teaches the method of claim 197 wherein said plurality of groups corresponds with a telephone keyboard symbol grouping (Ronchi et al., Column 10 Line 1-15).

Claims 199-200 are rejected on the same basis as claims 197-198 respectively.

Claims 201-202 are essentially the same as claim 197-198 respectively except that the claims set forth the claimed invention as a program storage device readable by a machine rather than a method for comparing keyword strings on a wireless user device and rejected for the same reasons as applied hereinabove.

Claims 203-204 are essentially the same as claim 197-198 respectively except that the claims set forth the claimed invention as an apparatus for comparing keyword strings on a wireless user device rather than a method for comparing keyword strings on a wireless user device and rejected for the same reasons as applied hereinabove.

Claims 205-206 are essentially the same as claim 197-198 respectively except that the claims set forth the claimed invention as an apparatus for comparing keyword strings on a wireless user device rather than a method for comparing keyword strings on a wireless user device and rejected for the same reasons as applied hereinabove.

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Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Contact Information

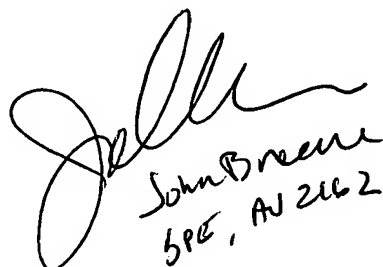
12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Myint whose telephone number is (571) 272-5629. The examiner can normally be reached on 8:30AM-5:30PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached on (571) 272-4107. The fax phone number for the organization where this application or proceeding is assigned is 571-273-5629.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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